

REMARKS

Claims 1-14 are pending in the application. Claims 1-14 have been amended. No new subject matter has been added by these amendments. Applicants respectfully request reconsideration of the present application in view of the following remarks.

Rejection of Claims 1-14 under 35 USC § 112

The Examiner rejected Claims 1-14 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Examiner submitted that the recited “grafted poly(ethylene oxide)” in Claims 1, 8-11 and 14 constituted indefinite subject matter as to the metes and bounds of these claims, which engendered an indeterminacy in scope. The Examiner also submitted that the recited “wherein the grafted poly(ethylene oxide) is a graft copolymer of poly(ethylene oxide) and at least one vinyl monomer” in Claim 2 constituted indefinite subject matter since: a) it was not readily ascertainable if Applicant intended a poly(ethylene oxide) grafted with at least one vinyl monomer, and b) it was not known by any rules of Chemistry how the “copolymer” can comprise “vinyl monomer” vs. “vinyl monomer units.”

The Examiner submitted that the recited “a graft copolymer of a homopolymer of poly(ethylene oxide) and at least one vinyl monomer” in Claim 3 constituted indefinite subject matter since: a) the meaning of “a graft copolymer of a homopolymer” was not readily ascertainable, and b) it was not readily ascertainable how a “copolymer” can contain “polar vinyl monomer” vs. “polar vinyl monomer units.” The Examiner also submitted that the recited “a graft copolymer of poly(ethylene oxide) and at least one polar vinyl monomer selected from” in Claim 4 constituted indefinite subject matter for the reasons stated above for Claim 2, and for the use of improper Markush terminology. The Examiner also noted that it was not readily ascertainable as to how “poly(ethylene glycol) methacrylates” and “poly(ethylene glycol) acrylates” differ from “poly(ethylene glycol) ethyl ether methacrylates” and “poly(ethylene glycol) ethyl ether acrylates,” respectively.

The Examiner submitted that the recited contents in Claim 5 constituted indefinite subject matter for the following reasons: a) it was not readily ascertainable as to what constituted the substrate to be grafted, and what constituted the grafting species, b) it was not readily ascertainable how the copolymer can comprise “monomer” vs. “monomer units,” and c) it was not readily ascertainable as to the basis, i.e., total composition, or else, for the contents of this claim. The Examiner also submitted that the recited “wherein the grafted copolymer of poly(ethylene oxide) comprises a graft copolymer of poly(ethylene oxide) and a monomer selected from ...poly(ethylene glycol) methacrylate and derivatives and analogs” in Claim 6 constituted indefinite subject matter for the respective reasons stated above for Claims 2 and 4, and since the terms “derivatives” and “analog” engendered an indeterminacy in scope.

The Examiner submitted that the recited “wherein the poly(ethylene oxide) comprise a graft copolymer of ... and 2-hydroxyethyl methacrylate” in Claim 7 constituted indefinite subject matter for the reasons stated above for Claim 2. The Examiner also submitted that the recited “melt blend” in Claims 9 and 10 constituted indefinite subject matter for lack of proper antecedent basis.

The Examiner submitted that the recited contents in Claims 9-11 constituted indefinite subject matter since the basis for the contents in each claim was not ascertainable. The Examiner also submitted that the recited “[a] method of making a film ... and forming the blend into a film” in Claim 13 constituted indefinite subject matter as lacking sufficient steps in the film formation. Applicants respectfully traverse these claim rejections for the following reasons.

Applicants have amended Claims 1-14 to more accurately define the scope of these claims. Applicants have amended Claims 1 and 14, to more accurately define the composition of the graft copolymer. Applicants have amended Claims 8-11 to more accurately define the scope of these claims. Applicants have also amended Claims 2, 3 and 4 to more accurately define the compositions in each claimed method. Applicants have amended Claim 4 to correct the Markush terminology.

Applicants respectfully submit that “poly(ethylene glycol) methacrylates” and “poly(ethylene glycol) acrylates” differ, respectively, from “poly(ethylene glycol) ethyl ether methacrylates” and “poly(ethylene glycol) ethyl ether acrylates. Poly(ethylene glycol) methacrylates contain a methacrylate group on one or both ends of a linear poly(ethylene glycol)

chain. For example, poly(ethylene glycol) dimethacrylate contains a methacrylate group at each end, and is denoted as $\text{CH}_2\text{C}(\text{CH}_3)\text{CO}-(\text{OCH}_2\text{CH}_2)_n-\text{OC}(\text{O})\text{C}(\text{CH}_3)\text{CH}_2$. Poly(ethylene glycol) ethyl ether methacrylates, on the other hand, contains an ethyl group on one end of the poly(ethylene glycol) chain, and a methacrylate group on the other end. For example, $\text{CH}_3\text{CH}_2-(\text{OCH}_2\text{CH}_2)_n-\text{OC}(\text{O})\text{C}(\text{CH}_3)\text{CH}_2$. Poly(ethylene glycol) acrylates contain an acrylate group on one or both ends of a linear poly(ethylene glycol) chain. For example, poly(ethylene glycol) diacrylate contains an acrylate group on each end, and is denoted as $\text{CH}_2\text{CHCO}-(\text{OCH}_2\text{CH}_2)_n-\text{OC}(\text{O})\text{CHCH}_2$. Poly(ethylene glycol) ethyl ether acrylates, on the other hand, would contain an ethyl group on one end of the poly(ethylene glycol) chain, and a acrylate group on the other end. For example, $\text{CH}_3\text{CH}_2-(\text{OCH}_2\text{CH}_2)_n-\text{OC}(\text{O})\text{CHCH}_2$.

Applicants have amended Claims 5, 9-11 to more accurately define the recited compositions, and to recite the basis for the listed weight percentages in each claim. Applicants have amended Claim 6 to more accurately define the subject matter of the claim, and to remove the Markush terminology. Applicants have amended Claim 7 to more accurately define the composition of the claimed method. Applicants have amended Claims 9-10 to provide proper antecedent bases. Applicants have also amended Claim 13 to recite a sufficient step for the film formation.

Applicants respectfully submit that the above amendments now render the Examiner's rejection of the respective claims moot. Therefore, Applicants respectfully request the withdrawal of this rejection.

Marked up version of re-written claims

Pursuant to 37 CFR §1.121(c)(1)(ii), another version of the rewritten claims marked up to show all the changes relative to the previous version of the claims is now set forth with deleted text shown in [brackets] and added text shown in underlining:

1. (Amended) A method of making a composition comprising melting and blending a poly(vinyl alcohol) and a [grafted] graft copolymer of poly(ethylene oxide),

wherein the graft copolymer of poly(ethylene oxide) comprises a poly(ethylene oxide) backbone main chain, and one or more chains derived from one or more types of monomers that differ chemically or configurationally from the poly(ethylene oxide) backbone, and wherein the one or more chains are bonded at one or more points along the poly(ethylene oxide) backbone.

2. (Amended) The method of Claim 1, wherein the [grafted poly(ethylene oxide) is a graft copolymer of poly(ethylene oxide) and at least] one or more types of monomers comprise one or more vinyl [monomer] monomers.

3. (Amended) The method of Claim 1, wherein the [grafted poly(ethylene oxide) is a graft copolymer of a homopolymer of poly(ethylene oxide) and at least] one or more types of monomers comprise one or more polar vinyl [monomer] monomers.

4. (Amended) The method of Claim 1, wherein the [grafted poly(ethylene oxide) is a graft copolymer of poly(ethylene oxide) and at least] one or more types of monomers comprise one or more polar vinyl [monomer] monomers selected from the group consisting of 2-hydroxyethyl methacrylate, poly(ethylene glycol) methacrylates, poly(ethylene glycol) ethyl ether methacrylates, poly(ethylene glycol) acrylates, poly(ethylene glycol) ethyl ether acrylate, poly(ethylene glycol) methacrylates with terminal hydroxyl groups, acrylic acid, maleic anhydride, itaconic acid, sodium acrylate, 3-hydroxypropyl methacrylate, acrylamide, glycidyl methacrylate, 2-bromoethyl acrylate, carboxyethyl acrylate, methacrylic acid, 2-chloroacrylonitrile, 4-chlorophenyl acrylate, 2-cyanoethyl acrylate, glycidyl acrylate, 4-nitrophenyl acrylate, pentabromophenyl acrylate, poly(propylene glycol) methacrylate,

poly(propylene glycol) acrylate, 2-propene-1-sulfonic acid and its sodium salt, sulfo ethyl methacrylate, 3-sulfopropyl methacrylate, and 3-sulfopropyl acrylate.

5. (Amended) The method of Claim 1, wherein the [poly(ethylene oxide) comprises a] graft copolymer of poly(ethylene oxide) comprises [and] from about 1 to about 30 weight percent, relative to the weight of the poly(ethylene oxide), of a polar vinyl monomer, a polar vinyl oligomer[, a polar vinyl polymer] or a combination thereof.

6. (Amended) The method of Claim 1, wherein the [grafted poly(ethylene oxide) comprises a graft copolymer of poly(ethylene oxide) and a monomer] one or more types of monomers comprise [selected from 2-hydroxyethyl methacrylate, poly(ethylene glycol) methacrylate and derivatives and analogs of poly(ethylene glycol) methacrylate] one or more hydroxyalkyl esters of methacrylic acid.

7. (Amended) The method of Claim 1, wherein the [poly(ethylene oxide) comprises a graft copolymer of poly(ethylene oxide) and] one or more types of monomers comprise 2-hydroxyethyl methacrylate.

8. (Amended) The method of Claim 1, wherein the [grafted] graft copolymer of poly(ethylene oxide) is [a] thermoplastic[,] and water-soluble [grafted poly(ethylene oxide)], and the poly(vinyl alcohol) is [a] thermoplastic[,] and water-soluble [poly(vinyl alcohol)].

9. (Amended) The method of Claim 1, wherein the [melt blend] composition comprises, based on the total weight of the graft copolymer of poly(ethylene oxide) and the poly(vinyl alcohol), from about 1 weight percent to about 99 weight percent of [grafted] the graft copolymer of poly(ethylene oxide) and from about 1 weight percent to about 99 weight percent of the poly(vinyl alcohol).

10. (Amended) The method of Claim 1, wherein the [melt blend] composition comprises, based on the total weight of the graft copolymer of poly(ethylene oxide) and the poly(vinyl alcohol), from about 10 weight percent to about 90 weight percent of [grafted] the

graft copolymer of poly(ethylene oxide) and from about 10 weight percent to about 90 weight percent of the poly(vinyl alcohol).

11. (Amended) The method of Claim 1, wherein the composition comprises, based on the total weight of the graft copolymer of poly(ethylene oxide) and the poly(vinyl alcohol), from about 10 weight percent to about 50 weight percent of [grafted] the graft copolymer of poly(ethylene oxide) and from about 50 weight percent to about 90 weight percent of the poly(vinyl alcohol).

12. (Amended) A method of making a composition comprising melting and blending a poly(vinyl alcohol), a poly(ethylene oxide), [at least] one or more types of polar vinyl [monomer] monomers and an initiator, under sufficient heat and shear conditions to form a homogenous melt blend of poly(vinyl alcohol) and [grafted] a graft copolymer of poly(ethylene oxide).

13. (Amended) A method of making a film comprising forming a melt blend of a poly(vinyl alcohol), a poly(ethylene oxide), [at least] one or more types of polar vinyl [monomer] monomers and an initiator, under sufficient heat and shear conditions to form a homogenous melt blend of poly(vinyl alcohol) and [grafted] a graft copolymer of poly(ethylene oxide); and

forming the melt blend into a film using extrusion or other conventional melt processing techniques.

14. (Amended) A method of making a film comprising extruding poly(vinyl alcohol) and [grafted] a graft copolymer of poly(ethylene oxide) in the shape of a film, and

wherein the graft copolymer of poly(ethylene oxide) comprises a poly(ethylene oxide) backbone main chain, and one or more chains derived from one or more types of monomers that differ chemically or configurationally from the poly(ethylene oxide) backbone, and wherein the one or more chains are bonded at one or more points along the poly(ethylene oxide) backbone.

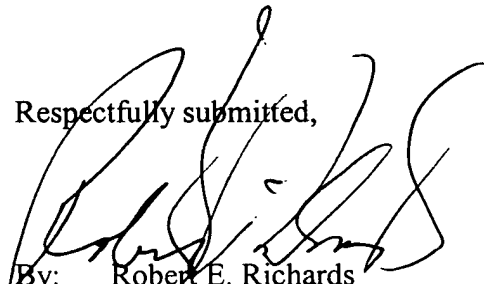
CONCLUSION

The foregoing is a complete response to the Office Action mailed May 21, 2002. Applicants respectfully submit that Claims 1-14 are in condition for allowance. Early and favorable consideration is solicited.

No additional fees are believed due; however, the Commissioner is hereby authorized to charge any deficiencies which may be required, or credit any over payment, to deposit account No. 11-0855.

If the Examiner believes that there are other issues that can be resolved by a telephone interview, or that there are any informalities that remain in the application, which may be corrected by the Examiner's amendment, a telephone call to the undersigned attorney at (404) 815-6500 is respectfully solicited.

Respectfully submitted,


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